

Analysis of FCC Secondary Spectrum Markets Positions, Policies and Comments

August 2008



© 2009 Spectrum Bridge, Inc.

Analysis of FCC Secondary Spectrum Markets Positions, Policies and Comments

Premise

A fundamental tenet of the Spectrum Bridge business plan is that the US Government, under the auspices of the FCC, will permit spectrum owners to sublicense their spectrum and facilitate an open market for spectrum brokering. While the FCC has not specifically endorsed the solution promulgated by Spectrum Bridge Inc. the following analysis of rule making and discussion of policy, beginning with a first policy statement in November 2000, shows that the FCC is actively encouraging spectrum owners to sublease their spectrum for creative and competitive applications. The analysis shows that secondary use of spectrum (the FCC uses the term "Secondary Markets"), dynamic leasing contacts, and market makers in spectrum transactions are important parts of the FCC vision for spectrum reform. The analysis also shows that the both the business model and technical system components of the Spectrum Bridge solution are viable under the FCC vision. It is our conclusion that given its demonstrated policy direction, as well as the trend toward liberalization in its continued rule making, it is reasonable to conclude that FCC will not hinder, and could plausibly support, the business model and technology envisioned by Spectrum Bridge.

NOTE: Spectrum Bridge created content is shown in italics throughout this document, all other content is taken directly from FCC documents so that the FCC's positions and policies could be conveyed in the Commission's own words. All FCC citations are referenced back to the original documents as well.

Analysis

I. PRINCIPLES FOR PROMOTING THE EFFICIENT USE OF SEPCTRUM BY ENCOURAGING THE DEVELOPMENT OF SECONDARY MAREKTS: INITIAL POLICY STATEMENT

In November of 2000, the FCC issued a groundbreaking Policy Statement entitled "Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets". In this statement the FCC fundamentally changes the way in which it viewed spectrum policy, the rights and responsibilities of spectrum holders and the way which the rights to use this spectrum could be transferred, bought and sold in private market transactions. Specifically the FCC laid down four fundamental guiding principles that open the door for the commercialization of spectrum brokering, opportunistic wireless devices (i.e. smart or cognitive radios and networks) and other spectrum efficient business models and technologies. These four principles were:

1. Facilitating secondary markets for radio spectrum that will allow and encourage licensees to make all or portions of their assigned frequencies and/or service areas available to other entities and uses.

The Commission envisioned that secondary markets can flourish by facilitating arrangements such as leasing, franchising, and joint operating agreements, and improving the conditions for transferability of spectrum usage rights through, for example, partitioning or disaggregation.

Analysis of FCC Secondary Spectrum Markets Positions, Policies and Comments

The objective is significantly expand and enhance the existing secondary markets for spectrum usage rights to permit spectrum to flow more freely among users and uses in response to economic demand, to the extent consistent with our other statutory mandates and public interest objectives.¹

2. That an expanded system of private sector markets will serve the public interest by creating new opportunities for increasing the communications capacity and efficiency of spectrum use by licensees.

Such secondary market transactions will thereby complement the primary assignment function performed by the Commission through its spectrum auctions and licensing processes and that a robust and effective secondary market for spectrum usage rights could help alleviate spectrum shortages by making unused or underutilized spectrum held by existing licensees more readily available to other users and uses and help to promote the development of new, spectrum efficient technologies.²

3. In the United States, virtually all spectrum, particularly in the most sought after bands below 3 GHz, has been allocated for various services. Consequently, there is very little unencumbered spectrum available for new uses or users. In order to provide spectrum for new services, we now have to find ways for such services to share spectrum with existing services or to reallocate spectrum from existing services to new services and technologies.³

4. The best way to realize the maximum benefits from the spectrum is to permit and promote the operation of market forces in determining how spectrum is used. A principal tenet of this market-based approach is that in order for competition to bring consumers the highest valued services in the most efficient manner, competing users of spectrum need flexibility to respond to market forces and demands.⁴

Though the Policy Statement goes on for an additional 25 pages the following paragraph take from the document best summaries the FCC perspective and policy goals:

- We continue to believe that an effective way to make unused spectrum held by existing licensees available to others may be through secondary markets. An effectively functioning system of secondary markets would encourage licensees to be more spectrum efficient by freely trading their rights to unused spectrum capacity, either leasing it temporarily, or on a longer-term basis, or selling their rights to unused frequencies. Increased efficiency would contribute significantly to our ongoing efforts to make additional spectrum available. We also believe that secondary market transactions could contribute to increasing the amount of spectrum available to prospective users, uses, and new wireless technologies by making more effective use of spectrum that is currently assigned to existing licensees.⁵

1. [Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets](#), Policy Statement (FCC 00-401) at 1, I-1

2. Id. at 1, I-2

3. Id. at 3, II-7

4. Id. at 3, II-2

5. Id. at 5, III-12

Analysis of FCC Secondary Spectrum Markets Positions, Policies and Comments

In addition to setting a clear policy direction, the FCC sought comments and suggestions on numerous topics from academia and commercial carriers, specifically; the Policy Statement also authorized the formation of a Spectrum Policy Task Force.

II. SPECTRUM POLICY TASK FORCE

In 2002, the Spectrum Policy Task Force (Task Force) conducted the first-ever comprehensive and systematic review of spectrum policy at the Commission. On November 15, 2002, the Task Force presented its findings and recommendations, including several regarding the Commission's regulatory framework for developing secondary markets consistent with an integrated, market-oriented approach as well as significant technological evolution. Based on the previous guiding principles and input solicited from the public and Task Force the FCC issued its Report and Order and Further Notice of Proposed Rulemaking six months later.

III. REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULEMAKING

On May 15, 2003, the FCC took significant first steps to facilitate the development of secondary markets in spectrum usage rights and established policies and rules to enable spectrum users to gain access to licensed spectrum by entering into different types of spectrum leasing arrangements with licensees in most Wireless Radio Services. The FCC also streamlined the approval procedures for license assignments and transfers of control in most Wireless Radio Services.

These steps advanced the general goal set forth in the Commission's Secondary Markets Policy Statement, namely that of significantly expanding and enhancing secondary markets to permit spectrum to flow more freely among users and uses in response to economic demand, to the extent consistent with their public interest objectives.

The policies implemented also were consistent with several spectrum policy recommendations of the Spectrum Policy Task Force Report, including allowing more flexible use of spectrum by licensees and other spectrum users, better defining licensees' and spectrum users' rights and responsibilities, enabling use of spectrum across various dimensions (frequency, space, and time), promoting the efficient use of spectrum, and providing for continued technological advances in smart radio technologies. In the Further Notice, the FCC proposed additional measures to facilitate the development of spectrum leasing, and sought particular comment on policies that could facilitate spectrum access for advanced technologies.

Significant rules enacted in the Report and Order included:

- 1. Revision to the Commission's *de facto* control standard for interpreting Section 310(d) requirements in the context of spectrum leasing, replacing the outdated Intermountain Microwave standard that has been in place since 1963 with a refined standard that better accords with our contemporary market-oriented spectrum policies, fast-changing consumer demands, and technological advances.⁶ Basically, the requirement for direct control of broadcasting facilities is not required to retain *de facto* control of the spectrum according to the FCC's new interpretation.*
- 2. Implementation of two different options for spectrum leasing. One option enables licensees and "spectrum lessee" to enter into leasing arrangements without the need for Commission approval so long as the licensee retains *de facto* control of the leased spectrum*

⁶ *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets* Report and Order Further Notice of Proposed Rulemaking (FCC 03-113), at 2, 1-3

Analysis of FCC Secondary Spectrum Markets Positions, Policies and Comments

under the newly refined standard. This option falls under the newly created concept of Spectrum Manager as defined for the 700 MHz guard band auctions. The other option permits parties to enter into arrangements in which the licensee transfers de facto control to the lessee pursuant to streamlined approval procedures.

Spectrum Leasing Options ⁷

- Under the first leasing option – “Spectrum Manager” leasing – parties can enter into spectrum leasing arrangements without the need to obtain prior Commission approval so long as the licensee retains both de jure control of the license and de facto control over the leased spectrum pursuant to the updated de facto control standard for leasing.
 - Under the second option – “de facto transfer” leasing – parties can enter into leasing arrangements whereby licensees retain de jure control of their licenses while de facto control over the use of the leased spectrum, and associated rights and responsibilities, are transferred for a defined period to spectrum lessees.
 - ◊ For short-term leasing (under 360 days) arrangements that meet the specified conditions the licensee must provide notice at least 10 days in advance of operation and will be approved within 10 days pursuant to special temporary authority (STA) procedures.
 - ◊ For long-term leasing the licensee will be required to provide notification and other relevant information and certification to the Commission with regard to each spectrum lease into which it has entered. Such notice must be provided within 14 days of the entering into the lease, and at least 21 days in advance of operation of facilities by the lessee.
3. Forbearance from Section 309(b) requirements relating to 30-day notice and comment for common carrier licenses for a telecommunications carriers or services.⁸ *This enabled the FCC to streamline the review process down from 30 days to 21 days. Non-telecom carriers were not granted this forbearance.*
 4. Licensees in the specified Wireless Radio Services may lease some or all of their spectrum usage rights to third parties, **for any amount of spectrum and in any geographic area encompassed by the license, and for any period of time** within the term of the license.⁹
 5. The spectrum leasing policies and rules apply to the following services in the Wireless Radio Services in which commercial or private licensees hold exclusive use rights:
 - the Paging and Radiotelephone Service (Part 22);
 - the Rural Radiotelephone Service (Part 22);
 - the Air-Ground Radiotelephone Service (Part 22);

⁷ Id. At 3,II-9

⁸ Id. at 78, IV - 199

⁹ Id. at 6, II- 9

¹⁰ Id. Appendix B at B-2, § 1.948

Analysis of FCC Secondary Spectrum Markets Positions, Policies and Comments

- the Cellular Radiotelephone Service (Part 22);
- the Offshore Radiotelephone Service (Part 22);
- the narrowband Personal Communications Service (Part 24);
- the broadband Personal Communications Service (Part 24);
- the Wireless Communications Service in the 698-746 MHz band (Part 27);
- the Wireless Communications Service in the 746-764 MHz and 776-794 MHz bands (Part 27);
- the Wireless Communications Service in the 1390-1392 MHz band (Part 27);
- the Wireless Communications Service in the paired 1392-1395 MHz and 1432-1435 MHz bands (Part 27);
- the Wireless Communications Service in the 1670-1675 MHz band (Part 27);
- the Wireless Communications Service in the 2305-2320 and 2345-2360 MHz bands (Part 27);
- the Wireless Communications Service in the 2385-2390 MHz band (Part 27);
- the VHF Public Coast Station service (Part 80);
- the 220 MHz Service (excluding public safety licensees) (Part 90);
- the Specialized Mobile Radio Service in the 800 MHz and 900 MHz bands (including exclusive use SMR licenses in the General Category channels) (Part 90);
- the Location and Monitoring Service (LMS) with regard to licenses for multilateration LMS systems (Part 90);
- paging operations under Part 90 ;
- the Business and Industrial/Land Transportation (B/ILT) channels (Part 90) (including all B/ILT channels above 512 MHz and those in the 470-512 MHz band where a licensee has achieved exclusivity, but excluding B/ILT channels in the 470-512 MHz band where a licensee has not achieved exclusivity and those channels below 470 MHz, including those licensed pursuant to 47 C.F.R. § 90.187(b)(2)(v));
- the 218-219 MHz band (Part 95);
- the Local Multipoint Distribution Service (Part 101);
- the 24 GHz Band (Part 101);
- the 39 GHz Band (Part 101);
- the Multiple Address Systems band (Part 101);
- the Local Television Transmission Service (Part 101);
- the Private-Operational Fixed Point-to-Point Microwave Service (Part 101); and,
- the Common Carrier Fixed Point-to-Point Microwave Service (Part 101)

6. However, the NPRM did not propose to extend leasing to certain other Wireless Radio Services, including:¹¹

- Public Safety Radio Services (Part 90),
- Guard Band Manager Service (Part 27, Subpart G),
- Maritime Services (Part 80),
- Aviation Services (Part 87),
- Personal Radio Services (Part 95) (other than the 218-219 MHz Service),
- Amateur Radio Service (Part 97),
- Experimental Radio, Auxiliary, Special Broadcast, and other Program Distributional Services (Part 74),
- As well as shared frequencies licensed under FCC Wireless Radio Service rules.

¹¹ *Id.* at 36, IV-3a (82)

Analysis of FCC Secondary Spectrum Markets Positions, Policies and Comments

In addition to the Rule making in this document the Further Notice of Proposed Rulemaking sought comment on issues fundamental to the development of advanced secondary markets in spectrum usage rights. Of particular importance to Spectrum Bridge the Commission asked:

- What additional steps the Commission should take to encourage the development of mechanisms for providing necessary spectrum information to licensees with underutilized spectrum and those in need of access to spectrum; what type of information interested parties may need; **the potential for “market-maker” intermediaries to develop**; and, the nature of the Commission’s role in regulating such intermediaries or otherwise facilitating access to spectrum information.

IV. SECOND REPORT AND ORDER, ORDER ON RECONSIDERATION, AND SECOND FURTHER NOTICE OF PROPOSED RULEMAKING

In September of 2004 the FCC released a Second Report and Order, Order on Reconsideration, and Second Further Notice of Proposed Rulemaking that took its rule making support for secondary markets even further. Significant in this document were the changes and positions took in the following areas:

1. Adopt immediate approval procedures (*i.e. next business day*) for certain categories of de facto transfer spectrum leasing arrangements that do not raise potential public interest concerns relating to eligibility and use, foreign ownership, designated entity/entrepreneur matters, or competition.
2. Further streamline processing of short-term de facto transfer leases by replacing the Special Temporary Authority (STA) procedures with these new immediate approval procedures.
3. Further streamline processing of certain categories of spectrum manager leasing arrangements (consistent with the new policies we adopt for certain categories of de facto transfer leasing arrangements)
4. Extend spectrum leasing policies to additional Wireless Radio Services, including Public Safety services (so long as public safety licensees lease spectrum to other public safety entities or entities providing communications in support of public safety operations), Automated Maritime Telecommunications Systems (AMTS) services, and Multichannel Video Distribution and Data Service (MVDDS).
5. Clarify the use of “smart” or “opportunistic” use technologies in the context of secondary markets, including clarification that **dynamic spectrum leasing arrangements are permitted under the spectrum leasing policies.**

¹² Id. at 11 II -3a

¹³ Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets Second Report And Order, Order On Reconsideration, And Second Further Notice Of Proposed Rulemaking (FCC 03-113) at 4, II-4

Analysis of FCC Secondary Spectrum Markets Positions, Policies and Comments

The Commission also saw fit to establish a new type of secondary market arrangement that facilitates the development of “private commons” in licensed wireless radio spectrum. ¹⁴

- The private commons concept provides a cooperative mechanism for licensees (or lessees) to make licensed spectrum available to users employing these advanced technologies in a manner similar to that by which unlicensed users gain access to spectrum to suit their particular needs, and to do so without the necessity of entering into individual spectrum leasing arrangements under existing rules. In the 2.4 GHz and 5 GHz bands, for instance, users gain access and use of the spectrum with specified types of low-power communications devices provided they comply with technical requirements established by the Commission and set forth in Part 15 rules. In these bands, users then can create their own networks – such as those that are ad hoc or “mesh” in nature. The private commons option provides a potentially complementary access model, in which licensees (or spectrum lessees) would determine to make access available to a similar class of users, and would do so under technical requirements for sharing use of the licensed band established and managed by the licensee (or lessee).
 - The nature of these types of users’ access to spectrum under this private commons option thus differs qualitatively from the nature of access provided to spectrum lessees under the Commission’s spectrum leasing policies and procedures. In the private commons, the licensee (or lessee) authorizes users of devices operating at particular technical parameters specified by the licensee (or lessee) to operate on the licensed frequencies, consistent with the applicable technical requirements and use restrictions under the license authorization, using peer-to-peer (device-to-device) technologies.
 - The users’ devices may be used to engage in peer-to-peer (device-to-device) communications, such as by becoming part of compatible ad hoc or “mesh” wireless networks. Such users may need access to a particular licensed spectrum band in lieu of (or perhaps in addition to) gaining access to other bands that may be more heavily used or that do not allow for the quality of service necessary for a particular application. This type of private commons might be particularly valuable to users that find existing bands that provide for unlicensed operations to be crowded or otherwise less desirable.
6. Adopt the same immediate approval procedures for certain categories of license assignments and transfers of control as adopted for de facto transfer spectrum leasing arrangements. ¹⁵
7. Extend policies for streamlined processing of license assignments and transfers of control to all of the Wireless Radio Services regulated by the Wireless Telecommunications Bureau (i.e. non-telecom carrier entities). ¹⁶

In addition to these changes the FCC also clarified its position on its role as, or endorsement of, a market maker: ¹⁷

¹⁴ *Id.* at 47, IV-B, 2b

¹⁵ *Id.* at 4, II-4

¹⁶ *Id.* at 5, II-4

¹⁷ *Id.* at 57, IV-D2

Analysis of FCC Secondary Spectrum Markets Positions, Policies and Comments

- With regard to the question of whether the Commission itself should provide additional information services to promote the development of secondary markets, we continue to believe that the private sector is better suited both to determine what types of information parties might demand, and to develop and maintain information on the licensed spectrum that might be available for use by third parties. Our decision is consistent with most of the comments we received on this question. Accordingly, while we will continue to collect and make available to the public the basic details related to spectrum licensees and lessees as provided in the Report and Order, we will not gather or provide additional information at this time.
- As noted above, the Commission plays a key role in providing reliable information about the identity of licensees and the spectrum they hold. Determining how best to analyze and organize this information in a manner that meets the varying needs of licensees and potential spectrum lessees is a separate undertaking that, we believe, can be achieved more efficiently and effectively by independent market-makers and exchanges competing with each other to provide the kinds of value-added information services that different parties in the market may demand. **For this reason, we take no action to establish the Commission as either a market-maker or exchange, nor do we take action to favor any particular type of private exchange mechanism. Similarly, we decline at this time to establish requirements for market-makers or other parties that may emerge to facilitate transactions.**

Also interesting to note is the fact that the FCC cites the support (for most of its policies) from major wireless carriers including Cingular, Verizon, Nextel T-mobile as well as major corporations such as Boeing and Cantor Fitzgerald.¹⁸

V. THIRD REPORT AND ORDER

On April 11, 2007 the FCC released its Third Report and Order. In this document the FCC addressed specific comments from carriers and interested parties who sought clarification or changes in the rules outlined in the Second Order and Report.

Most significant was a reaffirmation that: the licensees (or lessees) themselves, in their capacity as managers of private commons, exercise control under the license authorization and are responsible for establishing the technical parameters of the devices that would be used within the private commons, they must exercise their responsibilities so as to ensure compliance with the rules. They bear direct responsibility for establishing parameters of use that prevent harmful interference beyond the private commons areas and the boundaries of their licenses.¹⁹

Based on the scant record before us and the wide variety of ways in which a private commons could be implemented, we decline to modify our rules at this time to further detail the responsibilities placed on the managers of private commons. We do not want to limit at this time the various means by which a licensee (or lessee) might fulfill its obligations as manager of a private commons. **A “shut down” mechanism, or positive control capabilities associated with private commons devices, may be effective means for ensuring that a licensee (or lessee) exercises**

¹⁸ *Id.* see generally

¹⁹ Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets Third Report And Order (FCC 07-52) at 3, II-B1 (8)

Analysis of FCC Secondary Spectrum Markets Positions, Policies and Comments

de facto control over the use of the spectrum and ensures compliance with the Commission's rules under the license authorization. They are not, however, the only conceivable means, and we see no need at this time to limit other possible means that might be consistent with the framework that Commission has established with regard to private commons.²⁰

Conclusions

- ◇ *Promoting and encouraging the deployment of secondary market leasing of licensed spectrum is a fundamental tenet of the Commission's spectrum reform policy*
- ◇ *The FCC continues to favorably develop and evolve rules and regulations to promote and expand secondary market, as well as to expand the quantity of spectrum eligible for secondary market use*
- ◇ *Major carriers are aware of and appear to be in support of the various forms of spectrum leasing arrangements proposed by the FCC over the course of the last 6 years.*
- ◇ *The FCC is holding spectrum owners accountable for the compliance of their sub-lessees up to and possibly including "positive control mechanisms" as proposed in Spectrum Bridge's patent filings*
- ◇ *The FCC is strongly behind the concept of spectrum brokering (leasing) and supports the development of third party "market makers"*
- ◇ *The FCC has indicated it will not set specific requirements for spectrum market makers or transaction agents*
- ◇ *Spectrum Bridge's business model and technology is in harmony with the FCC's position on spectrum leasing and associated de facto and de jure requirements it places on spectrum owners.*

Final Thoughts

In the Separate Statement of Commissioner Susan Ness attached to the 2000 Policy Statement, she concludes her statement with the following:

"The viability of a secondary market for spectrum will depend upon three crucial elements: (1) whether the Commission in future proceedings can establish the appropriate legal framework; (2) whether industry can produce equipment that takes advantage of this flexibility without causing undue interference; and (3) whether the market can develop a mechanism for identifying and distributing available spectrum."²¹

Clearly the FCC has taken the steps to create an appropriate market oriented, legal framework to fulfill the requirement posed for the first element. Equipment suppliers are beginning to release smart radio devices and technology which meets the criteria for the second element. Spectrum Bridge is uniquely positioned to capitalize on and become the final element needed to drive the secondary markets revolution.

²⁰ *Id.* at 4, II-B1 (9)

²¹ *Principles for Promoting the Efficient Use of Spectrum by Encouraging the Development of Secondary Markets*, Separate Statement of Commissioner Susan Ness, at 1